

Switching Characteristics of Ferroelectric Transistor Inverters

Crystal Laws¹, Cody Mitchell¹, Todd C. MacLeod², and Fat D. Ho¹

¹The University of Alabama in Huntsville, Department of Electrical and Computer Engineering,
Huntsville, Alabama, 35899, USA

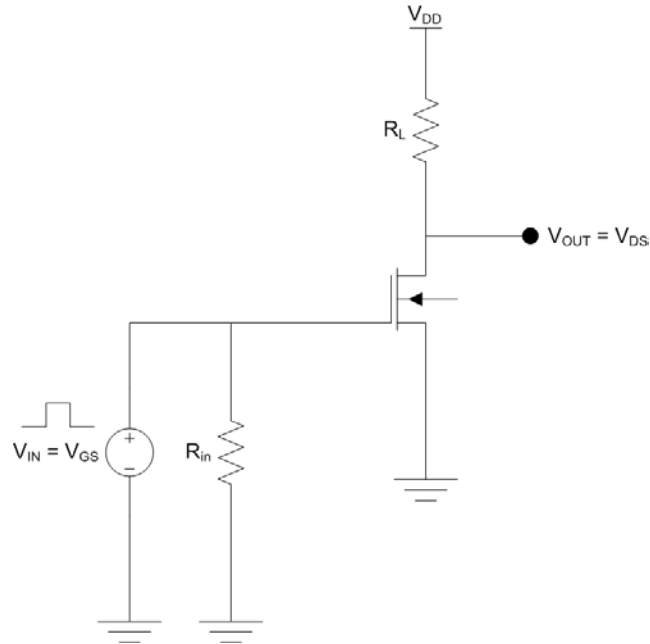
²National Aeronautics and Space Administration, National Space Science and Technology
Center, Huntsville, Alabama, 35805, USA

Abstract

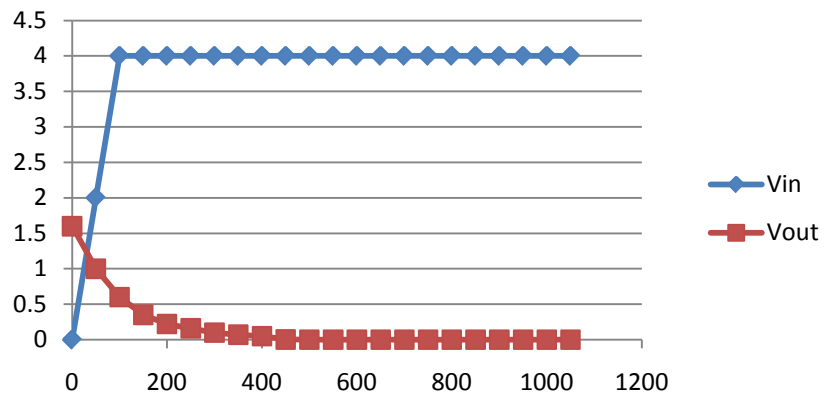
This paper presents the switching characteristics of an inverter circuit using a ferroelectric field effect transistor, FeFET. The propagation delay time characteristics, τ_{phl} and τ_{plh} are presented along with the output voltage rise and fall times, τ_{rise} and τ_{fall} . The propagation delay is the time-delay between the $V_{50\%}$ transitions of the input and output voltages. The rise and fall times are the times required for the output voltages to transition between the voltage levels $V_{10\%}$ and $V_{90\%}$. Comparisons are made between the MOSFET inverter and the ferroelectric transistor inverter.

Keywords: MOSFET, FeFET, ferroelectric transistor inverter

Ferroelectric Inverter Circuit



FeFET Inverter Fall Time



FeFET Inverter Rise Time

